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Collingwood, "That the thanks of the Society be given to the President, for the manner in which he has advanced the interests of the Society during the past half-year."

*Resolved*, on the motion of Dr. HUNT, seconded by Mr. C. ROBERT DES RUFFIERES, "That the thanks of the Society be given to the officers, for their services during the past half-year."

The meeting was then adjourned.

#### ORDINARY MEETING, 7TH JULY, 1863.

DR. HUNT, PRESIDENT, IN THE CHAIR.

The minutes of the preceding meeting were read and confirmed. It was announced that the following gentlemen had been elected since the last meeting:—

*Fellows*.—Dr. Henry Lonsdale, Carlisle; T. J. Hutchinson, Esq., H.M. Consul, at Rosario.

*Corresponding Members*.—M. Desnoyers, Paris; Professor Steenstrup, Copenhagen.

*Local Secretary Abroad*.—Dr. Anton Fritsch, Director of the Museum, Prague.

*Local Secretaries in Great Britain*.—H. A. Chignell, Esq., Brighton; T. R. Fairbank, Esq., M.D., Manchester; C. A. Rolph, Esq., Wolverhampton; Frederick Travers, Esq., Poole.

The following presents were announced, and the thanks of the society voted to their respective donors:—"Roman remains from Cirencester," presented by A. A. Fraser, Esq. "On the Diseases of the Nervous System," by Dr. Hughlings Jackson, presented by the author. "Copies of the Memoirs on the occurrence of human evidences in the Pliocene bed of Chartres," by the author, M. Desnoyers. Professor Rudolph Wagner's "Bericht über die Arbeiten in der Allgemeinen Zoologie in Jahre, 1862," by the author. Wiltshire, "On Flint Implements," by Alfred Stair, Esq.

Letters were read from Professors Rudolph Wagner, of Göttingen, and Theodor Waitz, of Marburg, returning thanks for the honour conferred upon them in electing them Honorary Fellows of the Society.

The following communication was read:—

*On Recent Evidences of Extreme Antiquity of the Human Race*. By C. CARTER BLAKE, Esq., F.G.S., Honorary Secretary of the Anthropological Society of London, and Foreign Associate of the Anthropological Society of Paris.

Although the subject of the following remarks is one on which I can offer no original information, yet the interest which Members of the Anthropological Society feel in all subjects connected with the antiquity of the human race, and the startling nature of the facts that have been recently laid before the Paris Academy of Sciences, by M. Desnoyers, have led me to offer these brief remarks on a discovery which, if true, would carry back the antiquity of the human race to a period far more ancient than that at which the drift strata of the

Somme valley were deposited, and coeval with the existence of extinct mammalia, belonging to the pliocene period.

(The previously known most ancient evidences of human remains and works of art were briefly recapitulated.)

On the 16th of May, 1860, M. Lartet, well known as one of the most accomplished palæontologists of Europe, in a letter to Mr. Leonard Horner, the President, laid before the Geological Society of London the evidences which led him to infer the probable coexistence of man with entire quadrupeds, proved by fossil bones, from various pleistocene deposits, bearing incisions made by sharp instruments. The bones so described consisted of remains of aurochs (*Bison prisus*), of large-horned deer (*Megaceros Hibernicus*), of stag (*Cervus Somoniensis*), of common stag (*Cervus elaphus*), and of *rhinoceros tichorhinus*. The inferences which M. Lartet drew were that these bones had been transversely cut across by some instrument having transverse inflections, such as by the roughly chipped flint hatchets of St. Acheul. The conclusions of M. Lartet were accepted, I believe, by the majority of the members of the Geological Society present; and while accepting them myself, I shall content myself with placing on the table the original memoir of this distinguished palæontologist. (*Quarterly Journal Geological Society*, vol. xvi, p. 471.)

We have thus unequivocal evidence that it is possible to find in deposits of pleistocene age, remains of bone of various animals extinct and recent, characteristic of the deposit, and that the incisions which are made by the flint implement or flint flake bear definitely recognizable characters which are susceptible of accurate and logical definition in the hands of so accomplished a palæontologist as M. Lartet.

The evidences which have been afforded to M. Desnoyers are referable to a far more distant period of geological time. To define, however, accurately, so far as in the present state of our knowledge we can venture so to do, the horizons at which the respective beds lie, in which these evidences of the rejected *débris* of human food are found, with extinct animals, we must venture to some extent into geological, and even into palæontological details; and I would therefore, entreat your indulgence while I briefly define in a general manner the zones of geological distribution of a few of the extinct pachyderms. Anthropology, in a case like the present, has a right to lean on geological evidence.

Three principal species of European fossil elephant are known. The *Elephas primigenius*, the *Elephas antiquus*, and the *Elephas meridionalis*. The mammoth (*Elephas primigenius*) has been discovered in postpliocene gravels in Northern Europe; and in the cave deposits. Its oldest known examples have been derived from the forest-bed of Norfolk. It thus survived through the period of the glacial drift. The *Elephas antiquus* has been found in the pliocene gravel of the Thames valley; in the caves of Kirkdale and Kent's Hole; in the Norfolk forest-beds; in the St. Acheul gravels. The *Elephas meridionalis* is to be found in the forest-bed of Norfolk, in the Norwich crag, in the deposits of the Val d'Arno; and at Saint-Prest, near Chartres. Several species of *Rhinoceri* are characteristic of later tertiary beds. Former palæont-

ologists only distinguished two, the *Rhinoceros tichorhinus* and the *Rhinoceros leptorhinus*. But the researches of Dr. Falconer have led him to divide the latter species into three. *Rhin. megarhinus* is known to us from the gravels at Gray's Thurrock and other localities. *Rhinoceros hemitachius*, according to Sir Charles Lyell, accompanies *Elephas antiquus* in most of the oldest British bone caves, such as Kirkdale, Cefn, Durdhan Down; Minchin Hole, and the Gower caverns. It has been also found at Clacton, and in Northamptonshire. *Rhinoceros etruscus* is the characteristic species of the Val d'Arno deposits; the forest-bed, and the superimposed blue clays with lignites of the Norfolk coast, nowhere as yet in the ossiferous caves of Britain. *Rhinoceros tichorhinus* is a characteristically drift species, and throughout its distribution associated with the mammoth *Elephas primigenius*.

M. Laugel has in the Bulletin of the Paris Geological Society, minutely described the bed of Saint Prest, near Chartres, as a characteristically pliocene stratum. The presence of *Elephas meridionalis*, of *Rhinoceros leptorhinus*, *Hippopotamus major*, many large species of stag, ox, horse, resembling that of the Val d'Arno, leave no doubt on the minds of palæontologists respecting this fact. Should any such exist, the fact, to which M. Desnoyers triumphantly points, that some of the remains from this bed have been examined by M. Lartet and Dr. Falconer, who unite in their interpretation as pliocene, render further objection as to the absolute identity of the fossils with those bearing the reputed names superfluous. So far the palæontological evidence.

In a geological point of view the beds, according to M. Desnoyers, closely resemble those of the Val d'Arno. It is composed of variously coloured sands, sometimes ferruginous, sometimes white, either pure or mixed with clay, with flint pebbles from the chalk, broken and rubbed, with some boulders of tertiary sandstone, termed *ladères* in the neighbourhood of Chartres. Sands formed the middle and lower parts of the beds, pebbles were found mixed therewith; both were presented in waved strata, and in alternate masses very irregularly repeated, and variously inclined, throughout a thickness of at least twelve to fifteen metres. These sands and pebbles are covered by a thick deposit of *læss*, and of more recent drift deposit (*terrain de transport*). They overlies conformably the chalk of which they fill the depressions, and from which they are separated at their base by a bed of large flints, which may represent a part of the flinty clay of the Perche.

M. Desnoyers, in the interesting memoir from which I have quoted the above facts, states that the workmen excavating the bed found remains, especially of rhinoceros, of which the following peculiarities presented themselves. I quote his own words. "I was struck, when partially removing the sand which covered the tibia of rhinoceros, to see striæ, varying in form, in depth, and in length, which could not be the result of breakage or drying, of which evidences were also visible, because they were evidently made anterior to such destructive powers, whilst they cut the bone transversely to its axis, and even passed above its ridges, following the line of its contour.

These striæ, or traces of incisions, very clean cuts, some of them very fine and very smooth, the others much larger and more obtuse, as if they had been produced by flat or notched plates of flint, were accompanied by small elliptical cuts or scratches, sharply characterized, as if they had been produced by the contact of an acute instrument." These cuts were partially covered with ferruginous *dendrites* and with sand, and their edges were slightly bouldered. M. Desnoyers considers them perfectly analogous in signification to the incisions which have been frequently recognized on the bones of the fossil cave mammalia, in the drift deposits, in peatbeds, and even in far more recent deposits, as the Gaulish, Gallo-Roman, and Germanic tombs.

M. Desnoyers, unwilling to arrive at any hasty conclusion, searched if analogous evidences could be found in the many collections from the same locality, in various private hands, and some of which had been excavated so long ago as 1849. I shall not here enter into the particulars of this detailed investigation; it may suffice to say that more than one hundred specimens were investigated, all of which presented the same characters. M. Lartet assisted M. Desnoyers in his investigation, and verified the following species of extinct mammalia, as affording evidences of cuts made by man on the bones:—*Elephas Meridionalis*; *Rhinoceros leptorhinus*; *Hippopotamus major*; *Cervus*, many species; *Megaceros Carnutorum* (Laugel); *Bos*, a large species; *Bos*, a small species. Other analogous evidences were observed. Thus, on the skull of *Elephas meridionalis*, from the same bed, in the Paris Museum of Natural History, traces can be observed of arrows which appear to have glanced away from the osseous matter, after having traversed the skin and the flesh; the impression of the acute triangular cavity left by the point of the arrow, and the serrated marks left by its edge are even visible. These marks, according to M. Desnoyers, are very different to those which are left as impressions of the teeth of carnivora, or as the marks of floating ice. The skulls of the large deer all exhibit one remarkable peculiarity. They appear to have been broken near the base of the antlers by a violent blow on the frontal bone, as in some of the ruminant skulls described by Steenstrup, from the Danish deposits. Other traces of knife-action are visible on the skulls of deer, and on the antlers. Lastly, and more rarely, bones of ruminants are found in the same beds, split open parallel with their axis, so as to extract the marrow. Such bones are common in the sepultures of the stone, bronze, iron, and Roman periods. I now exhibit a specimen from a Roman cemetery, kindly presented by one of our members, Mr. Fraser, to the society.

Besides these striations on the bones, which M. Desnoyers and M. Lartet concur in, referring unequivocally to human action, there are others to which the same origin is not assigned by them. Thus there are striæ exceedingly fine, exceedingly regular, many centimetres in length, and intercrossed by others equally clean and regular. The two French palæontologists are inclined to refer this description of marking to the agency of sand contained in blocks of ice, analogous to the markings on the scratched boulders, which are so familiar to every tertiary geologist.

I briefly recapitulate M. Desnoyers' conclusions.

1. That the fossil bones of *Elephas meridionalis*, *Rhinoceros leptorhinus*, *Hipp. major*, many large and small deer, many species of ox and other mammalia, considered as characteristic of the upper tertiary or pliocene beds, and discovered in an undisturbed deposit of this geological period, bear numerous and incontestable traces of cuts, striæ, and notches.

2. These markings are perfectly analogous to those which have been observed on the fossil bones of other more recent species of mammalia, some extinct, and accompanying the *E. primigenius*, the *R. tichorhinus*, the *Hyæna spelæa*, and others living at present, such as reindeer, many deer, the aurochs, found in osseous caverns and the drift or diluvian deposit. Similar vestiges can be seen on numerous bones of recent species found in building excavations, or in Gaulish, Gallo-Roman, Breton, or Germanic tombs.

3. The marks authenticated on the most ancient bones appear to have been, in a great part, of the same origin as those on the more recent bones, and can at present be only attributed to the action of man.

4. Other finer, more rectilinear and decussating, striæ, which are seen in great number on the bones for the pliocene beds of the environs of Chartres, and other localities, appear to be analogous to those which are observed on the boulders and pebbles, scratched, graven, and polished, of ancient and modern glaciers. The agitation due to torrential waters might scarcely have produced a similar result.

5. The section at St. Prest, in the environs of Chartres, unanimously recognized as upper tertiary or pliocene, and certainly as anterior to all the quaternary deposits which contain *Elephas primigenius*, presents numerous bones of *Elephas meridionalis*, and of many of the large species characteristic of the upper tertiary beds, on which are remarked the two descriptions of striation and marking.

6. From these facts it appears possible to conclude, with a great appearance of probability, until some more satisfactory explanation may clear up this double phenomenon, that man has lived on the French soil before the great first glacial period, at the same time as the *Elephas meridionalis* and the other pliocene species, characteristic of the Val d'Arno in Tuscany; that he has been in conflict with these great animals anterior to the *Elephas primigenius*, and the other mammalia of which the remains have been found mixed with vestiges or indications of man in the drift or quaternary deposits of the large valleys, and of caverns.

7. Finally, the bed at St. Prest is at present, in Europe, the most ancient example of the co-existence of man and extinct mammalia in geological time.

Thus far M. Desnoyers' paper.

I shall briefly pass over the principal objections that may be made to M. Desnoyers' discovery.

Firstly, as regards the archæological evidence. Incredulity may no doubt be provoked at the allegation that we can detect such traces of knife-action on fossil bones. It will be told us, that at the last meet-

ing of the British Association, a distinguished geologist exhibited a whittled bone of mammoth, as he termed it, and pointed out the evidences of what he deemed to be certainly cuts thereon, which cuts were undoubtedly assignable to a much more recent antiquity than that of the deposition of the strata containing elephantine remains. Nevertheless, I think those gentlemen who have had the opportunity of inspecting such a collection as that formed by Mr. Christy, for example, will arrive at the conclusion that an able anthropologist, accustomed to tact and discrimination, may be able to recognize such evidence of incisive or of erosive action, while the evidences which are undoubtedly due to human influence run no risk, when the investigation is sufficiently close, of being confounded with those of the teeth of the predaceous carnivore, or of the grating action of the sand contained in the slowly moving glacier. Our estimate of the vast experience of M. Lartet in this matter is a necessary factor in the conclusion to which we should arrive.

As regards the stratigraphical evidence, a sceptic who reads M. Desnoyers' description of the Saint Prest beds, which contain pebbles derived from the chalk, broken and with the edges rolled, and which also contain boulders of tertiary sandstone, may urge that these are true signs of a real drift deposit, and may allege that the occurrence of human evidences in such a stratum would be but a fact of the same order as the discovery of similar evidence in the Somme valley. Against such an hypothesis, the presence of *Elephas meridionalis* and *Rhin. etruscus*, might be urged in the St. Prest beds, species which have never hitherto been found in any drift deposit. M. Desnoyers, who has actually seen the bed, states that the true drift (*terrain de transport*) overlies the strata containing the chipped bones. Furthermore, the beds in question have long been regarded as newer pliocene, and by a singular coincidence, the example of *Elephas meridionalis* given in Sir Charles Lyell's work copied from Lartet, is selected from these Chartres beds. I therefore think that, unless some unforeseen discovery may be made, there can be no reasonable doubt that the conclusions of M. Desnoyers and Lartet, that the bed in question is truly newer pliocene, is well-grounded.

As regards the palæontological evidence, it may be first denied that the remains are really of *E. meridionalis* and *R. etruscus*. To this argument I think a reply is hardly needed, and the *argumentum ad verecundiam* is sufficient to disprove it. M. Lartet has checked the species with M. Desnoyers, and no palæontologist will be hardy enough to dispute their identification and verification.

It may next be hinted that *Elephas meridionalis* may have had a wider range in time than we have hitherto thought. An objector may allege that the deposit is comparatively of post-pliocene age, and that the *E. meridionalis* may have lived down to post-glacial times; or that meridionalis as a southern species may have lived down to a more recent period in France than here, upon the operation of the palæontological law, which preserves *Unio littoralis*, long since extinct in England, still in existence in Loire. According to such an hypothesis, *E. meridionalis* and *Rhin. etruscus* may have flourished in France,

while *E. primigenius* and *R. tichorhinus* existed in the British and Somme valley post-pliocene deposits. There is much plausibility in this argument. But if we accept the statement of M. Desnoyers, that true drift overlies the Saint Prest beds, the stratigraphical evidence is conclusive. Whatever may be the period at which *E. meridionalis* and *Rhinoceros etruscus* flourished at Chartres, they were preglacial, antecedent to the deposition of the great northern drift. Much light will, however, be thrown on the subject by a minute description of the associated mollusca, which, in the hands of a Searles Wood, or a Woodward, would tell a clear and intelligible story.

On ethnographical grounds it may be urged that a race of men living at such a stupendously distant period of time at which the newer pliocene beds were deposited, could not have arrived at such a degree of civilization as to have used arrows with acute points, and serrated edges, such as M. Desnoyers describes. In the far more recent Somme valley drift, no such complicated instance of man's sportsmanlike ingenuity has been discovered. The nearest approach to the arrowhead from the drift deposits is the simple flint flake. The arrow head belongs to a later period in that locality. I must refer this argument to those who may be more competent to deal with such evidences than myself.

Such, gentlemen, are the few observations which I would make on M. Desnoyers' discovery of the beds. While declining to give any positive opinion on the matter, until further examination shall have been made, I think it will be the opinion of every sincere geologist, that M. Desnoyers has made out a fair *prima facie* case in favour of the existence of man in the Saint Prest beds.

If such should actually have been the case, the student who reperuses the passage contained in Sir Charles Lyell's *Antiquity of Man*, will be struck with the prescience displayed by the learned author. Sir Charles said, speaking of the preglacial forest bed of the Norfolk Cliffs, belonging to the same great division of geological time as the Saint Prest beds:

"We need not despair of one day meeting with the signs of man's existence in the 'forest beds,' or in the overlying strata, on the ground of any incongruity in the climate, or incongruity in the state of the animate creation with the well-being of our species. For the present we must be content to wait, and consider that we have made no investigations which entitle us to wonder that the bones or stone weapons of the era of the *elephas meridionalis* have failed to come to light. If any such lie hid in those strata, and should hereafter be revealed to us, they would carry back the antiquity of man to a distance of time probably more than twice as great as that which separates our era from that of the most ancient of the tool-bearing gravels yet discovered in Picardy or elsewhere. But even then, the age of man, though pre-glacial, would be so modern in the great geological calendar, that he would scarcely date back so far as the commencement of the post-pliocene period."

Those members of the Anthropological Society who may give credence to M. Desnoyers' conclusions, will feel a certain amount of



justifiable gratification at the confirmation of the generalizations of Lyell, and will endorse his conclusions respecting the antiquity at which the post-pliocene strata were deposited.

MR. CHARLESWORTH: Although the facts just laid before the Society are of the greatest possible interest, the materials for discussion are extremely meagre. The objections which may be made to the conclusions of M. Desnoyers, would relate either to the origin of the markings on the bones or to the age of the beds in which they were found; that the bones have been correctly determined cannot be doubted, seeing they have been examined by men of such eminence as MM. Lartet and Desnoyers. The markings certainly appear to be ancient, as they are sometimes covered by dendrites. They also seem in every respect to resemble the markings undoubtedly caused by human agency on bones found in post-tertiary deposits, in the Kjökkenmöddings and in the Pfahlbauten. I have myself seen remains of *Megaceros Hibernicus*, the skulls of which were all broken across the frontal bone, evidently by human hands, exactly in the same manner as those of the large deer described by M. Desnoyers. All such evidence that I have seen, however, is confined to post-tertiary deposits; and, although, as existing animals go down low into the tertiaries, there is no *a priori* reason why man may not do so too, I think too much caution cannot be exercised in rigidly-examining evidence of the existence of man during the tertiary epoch. It is well to bear in mind such cases as that of the Red Crag, a deposit which, though examined by a series of geologists of the highest eminence, was long supposed to be of miocene age, but has recently been proved to be, to a certain extent, a drift deposit. In order satisfactorily to determine the age of the Saint Prest beds, it would not be sufficient to determine a few of the mollusca; a considerable series of such must be examined.

MR. C. C. BLAKE: M. Laugel distinctly pledges himself to the opinion that these beds are pliocene, and he bases his opinion on the fact, that they are overlaid by the drift. It cannot be maintained that the Saint Prest bones have been fractured by hyænas. The long bones are split in the direction of their length, but the hyæna splits bones according to whatever way he first catches hold of them. The uniform splitting cannot but be regarded as an evidence of design. No one would think that the bone from Cirencester presented by Mr. Fraser was fractured without an object. We have no right, when we allow that split bones, associated with remains of recent animals, were acted on by man, to deny that these other bones have been split by man, because they belong to an elephant long extinct, and because the admission would give the human race an antiquity almost incalculable. Any estimate offered us of the lapse of time since *Elephas meridionalis* trod the forests of Norfolk in company with a rhinoceros, which is antecedent to the *Rhinoceros tichorhinus*, must be inadequate indeed.

MR. CHRISTY: Multitudes of fossil bones have been found bearing evidence of the hand of man. If we can carry this evidence back to the aurochs, there seems no reason why it should not be carried back to *Elephas meridionalis*. At the same time I fully concur in the

opinion of Mr. Charlesworth, that we should be most careful how we take a step in advance of our present position.

A letter was read from Professor MARSHALL, requesting that his paper on "Cases of Microcephaly," which was to have been read at this meeting of the Society, might be postponed till the next meeting.

MR. C. C. BLAKE proceeded to make some observations on a skull, the property of HIS ROYAL HIGHNESS THE PRINCE OF WALES, exhibited to the Society, with his royal highness's permission, by Mr. B. Leadbeater, F.L.S., F.Z.S. The skull presented the peculiar characteristic of having an interparietal bone. This character, the "*os Incae*," was first observed by Dr. Bellamy in the skulls of the early Peruvians. Professor Tschudi considered it as a mark of the primeval distinction of the Peruvian race, the skulls of which, according to him, manifested this alleged "embryonic character" as in the lower mammalia. Morton observed it in a Chimu (called by him Chimuyan), and in a Cayuga skull. In the British Museum is a large handsome skull, belonging to the "Chincha" type, in which the interparietal bone is manifest. In Mr. Edward Gerrard's most useful and valuable catalogue the locality is marked as from Pasadama (*i.e.* Pachacamac), near Lima. In the collection of the Royal College of Surgeons, on No. 5711 (a Laplander), Professor Owen remarks, "The suture between the exoccipital and supraoccipital is retained on the right side, and partially so on the left." Here, however, there are numerous Wormian bones in the lambdoidal suture. On No. 5390 (a New Zealander), he says, "The upper half of the supraoccipital has been developed as an interparietal from a separate centre, and has united by a complex dentated suture with the lower half of the supraoccipital." A similar conformation exists in a skull from the Roman burial-place at Felixstow, preserved in the Anatomical Museum at Cambridge, and in the cranium of a Bengalee. The law which regulates the repetition of similar characters in skulls of nations aboriginally distinct is termed by Professor J. Aitken Meigs, of Philadelphia, "homiokephalic representation." Analogous congenital varieties or imperfections may be seen in almost every ethnic type. Dr. Williamson has described them in the Albanian, Singhalese, Timmani, Kosso, Krooman, Fanti, Ashantee, Calabar, Burmese (Malay), and Esquimaux; whilst in the Limbu tribe from Nepâl an instance has been described by Professor Owen, in which the "interparietal" is divided into three distinct *quasi*-symmetrical portions. Dr. Spencer Cobbold has seen a true interparietal bone in a skull in the Edinburgh Museum.

DR. THURNAM remarked on the peculiar shape of the interparietal bone in this specimen, as there was synostosis between the interparietal and the parietal. Instances of true interparietal bones were not so uncommon as had been considered.

The PRESIDENT adjourned the session of the Society till November.